WE CLAIM:

1. A fan assembly for use in ventilation of a building, which comprises:

(a) a housing having an outlet with a conical shape and an inlet with an inner cavity extending between the inlet and the outlet, the inner cavity having a center portion with a circular cross-section;

(b) a bracket mounted in the inner cavity of the housing spaced between the inlet and the center portion;

(c) a motor mounted on the bracket with a shaft having opposed ends;

(d) a center hub with a first end and a second end mounted on one end of the shaft such that the first end is facing the outlet of the housing and the second end is facing the inlet of the housing; and

(e) blades having opposed first and second ends with first and second sides extending between the ends and mounted at the first end on the center hub such that the first side is adjacent the first end of the hub and the second side is adjacent the second end of the hub wherein the first side of the blades adjacent the first end has a rounded protrusion which assists in keeping axial velocity of air coming off of the blades essentiallyconstant along most of a length of the blades.

2. The fan assembly of Claim 1 wherein a width of the blades between the sides adjacent the first end is less than a width of the blades between the sides adjacent the second end.

3. The fan assembly of Claim 1 wherein the blades have an airfoil shape.

4. The fan assembly of Claim 3 wherein a thickness of the blades varies smoothly from the first side to the second side.

5. The fan assembly of Claim 1 wherein the blades have a machete-like tip on the first side adjacent the second end of the blades.

6. The fan assembly of Claim 1 wherein there are three blades, wherein a width of the blades between the sides adjacent the first end is less than a width of the blades between the sides adjacent the second end, wherein the blades have a machete-like tip on the first side adjacent the second end of the blades and wherein the blades have an airfoil shape.

7. The fan assembly of Claim 1 wherein each blade is configured such that when the blades rotate, the axial velocity of air coming off the blades is essentially constant along most of a length of the blades from the second end of the blades to the first end of the blades.

8. The fan assembly of Claim 1 wherein the length of the blades is such that a distance between the center portion of the housing and the second end of each blade is between 0.4% and 0.8% of a diameter of a path of the blades.

9. The fan assembly of Claim 1 wherein the inlet of the housing has a square cross-section.

10. The fan assembly of Claim 1 wherein a shoulder is formed in the inner cavity of the housing at an intersection of the inlet and the center portion and wherein the shoulder is rounded such as to reduce disruption of air entering the center portion from the inlet.

11. The fan assembly of Claim 1 wherein the bracket is mounted adjacent the center portion and wherein the motor is mounted on the bracket such that the blades are completely within the center portion of the inner cavity.

12. The fan assembly of Claim 1 wherein the bracket includes a first and second arm which extend across the inner cavity of the housing such that the shaft of the motor is co-axial with an axial center of the center portion of the inner cavity.

13. The fan assembly of Claim 12 wherein the first and second arms have opposed ends with a front side extending between the ends and wherein the arms are mounted in the inner cavity such that the front side is facing the inlet of the housing and wherein the front side of the first and second arms of the bracket is radiused to reduce disruption of air entering the center portion from the inlet.

14. The fan assembly of Claim 13 wherein the first and second arms of the bracket each include opposed end sections with a center section spaced therebetween wherein the end sections extend outward from the center section such that when the bracket is mounted in the inner cavity, planes formed by the arms extend through and intersect at the axial center of the center portion of the inner cavity.

15. The fan assembly of Claim 1 wherein the housing has grooves adjacent the inner cavity extending at an angle between the center portion of the inner cavity and the outlet of the housing.

16. The fan assembly of Claim 15 wherein the outlet of the housing is a discharge cone having a conical shape and wherein the grooves are angled in a clockwise direction around the discharge cone.

17. The fan assembly of Claim 1 wherein a backdraft assembly is mounted at the inlet of the housing, wherein the backdraft assembly includes a frame with shutter blades pivotably mounted on the frame, wherein the shutter blades have an airfoil shape with a leading edge and a trailing edge and are mounted at the leading edge to the frame and wherein a flexible flap is mounted on the trailing edge such that when the shutter blades are in a closed position, the flexible flap of one shutter blade contacts a next adjacent shutter blade for sealing the backdraft assembly to prevent air in the inner cavity of the housing from moving out of the housing through the inlet and the backdraft assembly and wherein a side of the frame opposite the inlet is radiused to reduce disruption of air entering the fan assembly.

18. The fan assembly of Claim 17 wherein the backdraft assembly is removable and wherein the inner cavity of the housing adjacent the inlet is provided with toggle latches which engage a strike mounted on the frame of the backdraft assembly to secure the backdraft assembly on the inlet.

19. The fan assembly of Claim 17 wherein the frame of the backdraft assembly has radiused edges on an outside surface opposite the inlet of the housing to reduce disruption of air entering the housing.